Mechanical Engineering Design Clinic Overview

New Mexico Tech’s Junior/Senior Design clinic is a requirement for all Mechanical Engineering majors. Students take 4 semesters of the course, providing them with ample instruction and experience in working in teams to complete design projects for external clients. Both the course content and the hands-on project work provide students with an understanding for how the mechanical design project works as well as how a design concept is created and the various steps that are then required to complete a detailed design. Students’ work in the design clinic includes development of program plans that cover all the key aspects of the design process. Design clinic students must review the problem definition, objective and specification, and design concept selected and then complete a detailed design, building a prototype and determining how well the prototype design meets the objectives.

Following are the design clinic process steps all teams are expected to use to guide their approach:

1. Define a process for documenting and presenting work
2. Define the problem
3. Create numerous potential solutions
4. Evaluate these solutions
5. Select the solution with the highest potential for success
6. Analyze this solution
7. Complete a detailed design and develop plans for creating/acquiring the parts
8. Manufacture and test a prototype

Communication, both written and oral, is an important part of each team’s design and project management process. Appropriate agreement must be achieved by the design teams on the desires of the customer and the ability of the team to fulfill the desires, division of the work among team members or sub-teams, progress reporting both among the team members and to supervision, and “selling” the project to the customer and supervision all require complete and unambiguous communication skills.

Instructions for Mechanical Engineering Design Clinic Project Proposal Submissions

For projects beginning in the Fall semester, proposals are due July 1st.

For projects beginning in the Spring semester, proposals are due November 30th.

Submit proposals electronically to Julie Ford at iford@nmt.edu

Project Overview: Please provide a one paragraph to one page length description of the project you are planning to submit in either a Word, PDF, or PowerPoint attachment. If you can also provide specifications, that will be helpful. The project should be aimed at mechanical engineers. Because our program includes broad coverage of mechanical, electrical, structural, and biomedical areas, projects could encompass a wide variety of topics. Include a description of the project’s importance to your organization as well as to the education and future of our students. Also include estimation for length of time you anticipate a student team would need to follow the above design clinic process steps and create and test a prototype (doing so will guide our planning to devote 1, 2, or more semesters to the project. The majority of our projects are 2 semesters long). If you can also estimate the ideal size for a student team, that will guide our planning and placement of students on projects. While the majority of our projects are comprised of student teams solely from Mechanical Engineering, we do have some interdisciplinary projects. If yours falls in that category, please clarify what other discipline you’d recommend recruiting students from. Please designate a point of contact who will be available to communicate and advise students throughout the process (via teleconference is the norm) and include this individual’s email and phone #.

Budget & Resources: Identify the resources and funds that you will be providing the students for this project. While we do not charge for student engineering, we do expect that project sponsors will cover material costs as well as other expenses incurred (ie: travel to project site if that is necessary, machining that can’t be handled by our NMT Mechanical Engineering Machine Shop, etc.)